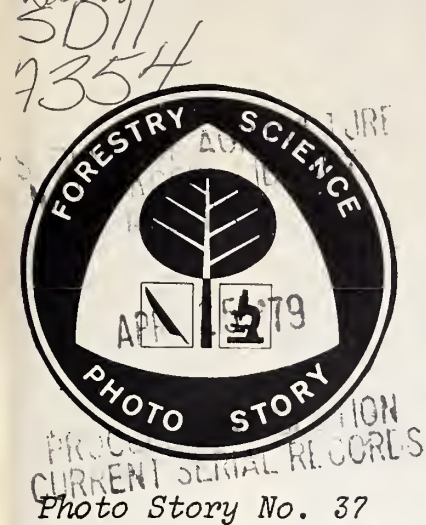


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[1977]



*SURFACE MINING FOR COAL (above) changed this once wooded ridge top in eastern Kentucky to a gently rolling landscape. Mulching experiments now underway will turn it back to verdant beauty.*

*DARRELL BAILEY, (left), co-owner of Ken Lick Coal Co., points with pride to autumn olive bushes growing on previously mined land near the mulching site.*

## Mulches help turn bleak to beautiful

More than 100,000 tons of coal were removed from a hillside bordering Magoffin and Breathitt counties in eastern Kentucky one summer month in 1978.

That's news to no one familiar with the area's heavy mining activity. What is noteworthy are some innovative approaches to the reclamation of surface-mined land taking place there now.

From the air, the flattened ridge top might resemble a crazy checkerboard. On the ground it looks like an evenly graded, winnowed mound of earth, punctuated with a small pond. What distinguishes it from a thousand other areas

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NORTHEASTERN FOREST EXPERIMENT STATION • BROOMALL, PENNSYLVANIA 19008







*Spray, crimp, blow,...steps in the process of mulching sound like a trip to the hairdresser's habitat. From left, grass seed and fertilizer spray from a hydroseeder; hay is pressed*

is the way the color of the ground changes as you glance around the 20-acre site. Dark brown, light brown, off-white, green, grey. A test site for house paints? To the contrary. Behind this colorful display are a mining company, a government agency, and an attempt to find the best way to encourage new growth on stripped land.

The company is Ken Lick Coal, the agency is the USDA Forest Service, and the attempt is an experiment with mulches.

Mined land needs all the assistance it can get. Careful grading, fertilizing, and seeding are sometimes not enough. To discourage erosion and encourage revegetation, mulching is often necessary as well. Until now, the most popular mulches have been hay and straw. But with the introduction of promising new mulches, the hay-days may be over.

The colored patches that cover this eastern Kentucky strip-mine are test plots for many different types and combinations of mulches. On one, ground-up bark has been sprayed in a thick layer; another bears wood chips, while a third holds a combination of chips, bark, and chicken manure. Hay will be tested against these and other mulches, which include refuse from seed mills, and a wood fiber product. In all, about 40 test plots are involved.

Despite the objectivity of their experiments, the Forest Service researchers are naturally biased toward some of the mulches. They are especially interested in products that present opportunities for using the whole tree.

Two of the materials being tested are by-products of mining and logging... trees or parts of trees that normally go to waste. When mining begins, all vegetation is cleared from the land. At the Ken Lick mine, trees of merchant-





*but the effects are as far-reaching as controlling erosion and creating new wildlife the soil with a Krimper; and a slow moving truck sends a stream of bark downhill.*

able size are cut into logs and sold to local sawmills. The limbs and smaller trees are chipped and sold to a paper mill.

Researchers wondered if the tree chips serve as a useful mulch. They hoped that the same trees that were removed for mining could be returned to the earth to help pave the way for grass, shrubs, and new trees. Several problems would be solved at once. These tests will soon show how successful chips are as mulch.

A timber by-product that creates some disposal problems for lumber mills is bark. Bark is used occasionally for mulching in gardens and around homes. But so much goes unused that lumber mills will practically pay someone to take it away. Bark has already proven successful on a small scale, and now researchers will have a chance to test its performance on an actual mining site. Both the bark and the wood chips are from hardwoods common in the area, including hickory, oak, tulip-poplar, and sassafras.

The Forest Service researchers work out of a laboratory in Berea, Kentucky, where the major concern is rehabilitation of strip-mined land. They are one of 14 labs that form the Northeastern Forest Experiment Station. All aspects of forestry - including insect and disease control, silviculture, and wildlife management - are targets for the Station's research.

The Berea work has this multi-disciplinary aspect as well, with research covering problems in engineering, hydrology, biology, chemistry, geology, and forestry. The experiment with mulches is conducted by Willis Vogel and Chuck Wolf, who invite inquiries about their project. They can be reached at the Northeastern Forest Experiment Station, 204 Center Street, Berea, Kentucky 40403, phone (606)-986-8431.





*Spray, crimp, blow,...steps in the process of mulching sound like a trip to the hairdresser, but the effects are as far-reaching as controlling erosion and creating new wildlife habitat. From left, grass seed and fertilizer spray from a hydroseeder; hay is pressed into the soil with a Krimper; and a slow moving truck sends a stream of bark downhill.*

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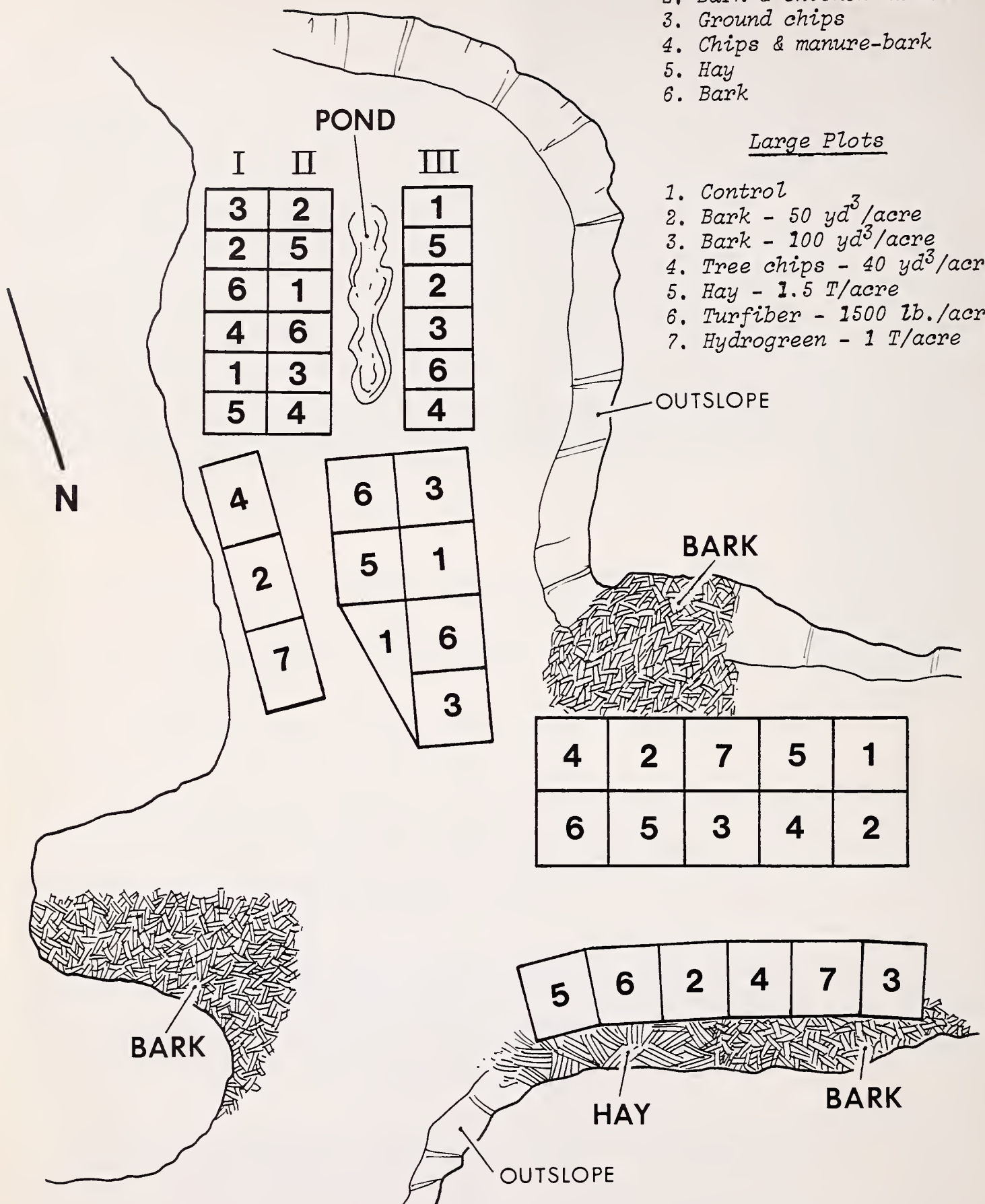
# LEGEND

## Small Plots

1. Control
2. Bark & chicken manure
3. Ground chips
4. Chips & manure-bark
5. Hay
6. Bark

## Large Plots

1. Control
2. Bark - 50 yd<sup>3</sup>/acre
3. Bark - 100 yd<sup>3</sup>/acre
4. Tree chips - 40 yd<sup>3</sup>/acre
5. Hay - 1.5 T/acre
6. Turf fiber - 1500 lb./acre
7. Hydrogreen - 1 T/acre



Mulches and their arrangement on the experimental plots.

XS





